

John Evan Pearson
Publications

1. "Automated Maximum Likelihood Separation of Signal from Background in Noisy Quantal Data". (in preparation, draft available).
2. "Binding Site Dynamics Near a Point Source", William J. Bruno & John E. Pearson. in preparation draft available.
3. "Messages Diffuse Faster Than Messengers: FCS and FRAP yield consistent estimates of Bcd effective diffusion." Lorena Sigaut, John E. Pearson, Alejandro Colman-Lerner, Silvina Ponce Dawson. in preparation draft available

Manuscripts In Press:

4. "A Data-driven model of a Modal Gated Ion Channel: The inositol 1,4,5-trisphosphate Receptor in Insect Sf9 Cells", Ghanim Ullah, Don-On Daniel Mak, and John E Pearson, *J. Gen. Physiology*(August 2012).
5. "Simplification of Reversible Markov Chains by Removal of States with Low Equilibrium Occupancy", Ghanim Ullah, William J. Bruno, John E. Pearson, *J. Theor. Biol.*
6. "Permeant Calcium Ion Feedback Regulation of Single Inositol 1,4,5-trisphosphate Receptor Channel Gating", Horia Vais, J. Kevin Foskett, Ghanim Ullah, John E. Pearson and Don-On Daniel Mak, *J. Gen. Physiol.*

Published Articles

7. "Multi-scale Data-Driven Modeling and Observation of Calcium Puffs", Ghanim Ullah, Ian Parker, Don-On Daniel Mak, and John E Pearson, *J. Cell Calcium* published on line, June 6 2012.
<http://www.sciencedirect.com/science/article/pii/S0143416012000929> .
8. "Origins of ligand dependence of waiting times of single-molecule fluorescence binding", Jin Yang and John E. Pearson, *J. Chem. Phys.* J. Chem. Phys., 136, 24. <http://link.aip.org/link/?JCP/136/244506> .
9. "Stochastic Theory of Early Viral Infection: Continuous versus Burst Production of Virions", John E. Pearson, Paul Krapivsky, Alan Perelson, *PLOS Computational Biology*, Feb 2011.
<http://www.ploscompbiol.org/article/info%3Adoi%2F10.1371%2Fjournal.pcbi.1001058>

10. "Flash radiography with 24 GeV/c protons", C. L. Morris, E. Ables, K. R. Alrick, M. B. Aufderheide, P. D. Barnes, Jr., K. L. Buescher, D. J. Cagliostro, D. A. Clark, D. J. Clark, C. J. Espinoza, E. N. Ferm, R. A. Gallegos, S. D. Gardner, J. J. Gomez, G. A. Greene, A. Hanson, E. P. Hartouni, G. E. Hogan, N. S. P. King, K. Kwiatkowski, R. P. Liljestrand, F. G. Mariam, F. E. Merrill, D. V. Morgan, K. B. Morley, C. T. Mottershead, M. M. Murray, P. D. Pazuchanics, J. E. Pearson, J. S. Sarracino, A. Saunders, J. Scaduto, A. E. Schach von Wittenau, R. A. Soltz, S. Sternbenz, R. T. Thompson, K. Vixie, M. D. Wilke,, D. M. Wright, and J. D. Zumbro, *J. Appl. Phys.* **109**, 104905 (2011).
jap.aip.org/resource/1/japiau/v109/i10/p104905_s1
11. "An investigation of models of the IP3R channel in Xenopus oocyte", J. W. Shuai, D. P. Yang, J. E. Pearson, and S. Rdiger, *Chaos*, **19**, 3, 2009.
12. "Effects of Jamming on Nonequilibrium Transport Times in Nanochannels", A Zilman, J.E. Pearson, G Bel, *Phys. Rev. Lett.* **103**, (2009)
- .
13. "Modeling Ca²⁺ Feedback on a Single Inositol 1,4,5-Trisphosphate Receptor and Its Modulation by Ca²⁺ Buffers", *Biophysical Journal*, **95**, 3738-3752, 2008
14. "A Kinetic Model of Single and Clustered IP3 Receptors in the Absence of Ca²⁺ Feedback," Jianwei Shuai, John E. Pearson, J. Kevin Foskett, Don-On Daniel Mak and Ian Parker, *Biophys. J.* **93**, p.1151-1162, (2007).
[http://www.cell.com/biophysj/abstract/S0006-3495\(07\)71373-5](http://www.cell.com/biophysj/abstract/S0006-3495(07)71373-5)
15. "Rapid Kinetics of Ligand Regulation of Single InsP₃ Receptor Ca²⁺ Release Channels," Don-On Daniel Mak, John E. Pearson, King Pan Loong, and Kevin Foskett, *EMBO Reports*, **8**, p.1044-1051, (2007).
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2247393/>
16. "Mode Switching Is the Major Mechanism of Ligand Regulation of InsP3 Receptor Calcium Release Channels," Lucian Ionescu, Carl White, King-Ho Cheung, Jianwei Shuai, Ian Parker, John E.Pearson, J. Kevin Foskett, and Don-On Daniel Mak, *J. Gen. Physiol.* (Nov. 2007).
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2151663/>
17. "On Imposing Detailed Balance in Complex Reaction Mechanisms," Jin Yang, William J. Bruno, William S. Hlavacek, and John E. Pearson, *Biophys. J.* **91**, p.1136-1141, (2006).
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1563764/>
18. "Messages Diffuse Faster than Messengers," Bernardo Pando, Don-On Daniel Mak, Silvina Ponce Dawson, and John E. Pearson, *Proc. Natl. Acad. Sci. USA*, **103**, p.5338-5342, (2006).
<http://www.pnas.org/content/103/14/5338.abstract>

19. "Transformations that Preserve Detailed Balance," *J. Comp. Bio.* William J. Bruno and John E. Pearson, p.1574-1578, (2006).
20. "Using independent open-to-closed transitions to simplify aggregated Markov models of ion channel gating kinetics", William J. Bruno, Jin Yang, John E. Pearson, *Proc. Natl. Acad. Sci. USA*, **102**, p.6326–633, (2005).
<http://www.pnas.org/content/102/18/6326/F4.expansion.html>
21. " Φ -Value Analysis of a Linear, Sequential Reaction Mechanism: Theory and Application to Ion Channel Gating," Yu Zhou, John E. Pearson, and Anthony Auerbach, *Biophys. J.*, **89**, p.3680-3685, (2005).
[http://www.cell.com/biophysj/abstract/S0006-3495\(05\)73014-9](http://www.cell.com/biophysj/abstract/S0006-3495(05)73014-9)
22. "Sheet Excitability and Nonlinear Wave Propagation," Bernardo Pando, John E. Pearson, Silvina Ponce Dawson, *Physical Review Letters* **91**, p.258101–258105 (2003).
<http://prl.aps.org/abstract/PRL/v91/i25/e258101>
23. "Modelling Intracellular Calcium Waves and Sparks," Greg Smith, John E. Pearson and Joel Keizer, book chapter in *Computational Cell Biology*, (Eds; Fall, Marland, Wagner, and Tyson), (Interdisciplinary Applied Mathematics, Springer, 2002).
24. "Towards a Global Classification of Excitable Reaction-Diffusion Systems," Silvina Ponce Dawson, Maria Veronico D'Angelo, and John E. Pearson, *Physics Letters A*, p.346–352, **265** ,(2000).
<http://arxiv.org/abs/patt-sol/9811003>
25. "Solving stiff differential equations with the method of patches," David Brydon, John E. Pearson, and Michael Marder, *J. Comp. Phys.*, **144**, p.280–298, (1998).
26. "Tunable Pinning of Burst Waves in Extended Systems with Discrete Sources," Igor Mitkov, Kosta Kladko, and John E. Pearson, *Phys. Rev. Lett.*, **81**, p.5453–5456, (1998).
27. "Saltatory Propagation of Ca^{2+} Waves by Ca^{2+} Sparks," Joel Keizer, Greg Smith, Silvina Ponce Dawson, and John E. Pearson, *Biophys. J.*, **75**, p.595–600, (1998).
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1299735/pdf/9675162.pdf>
28. "Semi-discrete Systems and Intracellular Calcium Dynamics," John E. Pearson, Silvina Ponce Dawson, Igor Mitkov, *6th International Conference on Fuzzy Theory and Technology; Publisher USA Assoc. for Intell Machinery*, 23-28 Oct Research Triangle, p.404-407, (1998).
29. "Simulation of the Fertilization Wave in *Xenopus laevis* eggs," John Wagner, Yu-Xian Li, John E. Pearson, and Joel Keizer, *Biophys. J.*, **75**, p.2088–2097, (1998).

30. "Fire–Diffuse–Fire Model of Dynamics of Intracellular Calcium Waves," Silvina Ponce Dawson, Joel Keizer, and John E. Pearson, *Proc. Natl. Acad. Sci. USA*, **96**, p.6060–6063, (1999).
<http://www.pnas.org/content/96/11/6060.full>
31. "Geometric Features of Microtubule Dynamics," Silvina Ponce Dawson, John E. Pearson, *Physica A*, **257**, p.156–164, (1998).
32. "Crisis on Skid Row," John E. Pearson and Silvina Ponce Dawson, *Physica A*, **257**, p.141–148, (1998).
<http://www.sciencedirect.com/science/article/pii/S0378437198001368>
33. "Self-Replicating Spots in Reaction Diffusion Systems," William Reynolds, Silvina Ponce Dawson, John E. Pearson, *Phys. Rev. E*, **56**, p.185–198, (1997).
<link.aps.org/doi/10.1103/PhysRevE.56.185>
34. "Numerical and measured data from the 3D salt canopy physical modeling project," C.R. Bradley, M. Fehler, L. House, J. Pearson, R. Wiley, J. TenCate, *Society of Exploration Geophysicists International Exposition and 67th Annual Meeting* (1997).
35. "Microscopic Simulation of Chemical Bistability in Homogeneous Systems," F. Baras, M. Malek Mansour, and John E. Pearson, *J. Chem. Phys.* **185** 18, p.8257–8261, (1996).
36. "Dynamics of Self-Replicating Patterns in Reaction Diffusion Systems," William Reynolds, John E. Pearson, Silvina Ponce Dawson, *Physical Review Letters*, **72**, p.2797–2800, (1994).
<link.aps.org/doi/10.1103/PhysRevLett.72.2797>
37. "Experimental Observation of self-replicating spots in a reaction–diffusion system," Kyoung Lee, William McCormick, John E. Pearson, and H.L. Swinney, *Nature*, **369**, p.215–218, (1994).
<http://www.nature.com/nature/journal/v369/n6477/abs/369215a0.html>
38. "Self-Replicating Domains," Silvina Ponce Dawson, Brosl Hasslacher, and John E. Pearson, *Pattern Formation and Lattice Gas Automata*, (Proceedings NATO Workshop, Waterloo, Canada, June 7–12, 1993) A. Lawniczak and R. Kapral, eds, Fields Institute Communications (American Math. Society)
39. "Complex Patterns in a Simple System," John E. Pearson, *Science*, **261**, p.189–192, (1993).
<http://www.sciencemag.org/content/261/5118/189>
<http://arxiv.org/abs/patt-sol/9304003>
40. "Pattern Formation in 2+1 Species Reaction–Diffusion Systems," John E. Pearson, *Physica A*, **188**, p.178–189, (1992).

41. "Colored Noise Induced Nonequilibrium Transition in a New Chemical Oscillator," JQ Fang and John E. Pearson, *Comm. in Theor. Phys.* **17**, 1, p.39–48, (1992).
42. "Pattern–Formation in an N+Q Component Reaction–Diffusion System," John E. Pearson and William J. Bruno, *CHAOS*, **2**, p.513–524, (1992).
43. "Instabilities of Front Patterns in Reaction–Diffusion Systems," A. Arneodo, J. Elezgaray, John E. Pearson, and T. Russo, *Physica D*, **49**, p.141–160, (1991).
44. "Microscopic Simulation of Chemical Oscillations in Homogeneous Systems," Florence Baras, John E. Pearson, and M. Malek Mansour, *J. Chem. Phys.*, **93**, p.5747–5750, (1990).
45. "Turing Instabilities with Nearly Equal Diffusion Coefficients," John E. Pearson and W. Horsthemke, *J. Chem. Phys.*, **90**, p.1588–1599, (1989).
http://jcp.aip.org/resource/1/jcpa6/v90/i3/p1588_s1?isAuthorized=no
46. "Turing Patterns in an Open Reactor," John A. Vastano, John E. Pearson, W. Horsthemke and Harry L. Swinney, *J. Chem. Phys.*, **88**, p.6175–81, (1988).
47. "Chemical Pattern Formation With Equal Diffusion Coefficients," John A. Vastano, John E. Pearson, W. Horsthemke and Harry L. Swinney, *Physics Letters*, **A 124**, p.320–324, (1987).
<http://www.sciencedirect.com/science/article/pii/0375960187900193>
48. "An Experimental and Theoretical Study of the Ballast Resistor: A Spatial Pattern Forming System," Norman Bujanos, John E. Pearson, W. Horsthemke and William McCormick, *Physics Letters*, **A 127**, p.138–142, (1987).